

IS HABITAT DESTRUCTION IN INDIA AND PAKISTAN BEGINNING TO AFFECT THE STATUS OF ENDEMIC PASSERINE BIRDS ?¹

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The status and distribution of endemic passerine birds in India and Pakistan was examined to test the hypothesis that, in areas where human degradation of natural ecosystems is very pervasive, continental passerine species may become vulnerable to extinction. Species were classified according to their distribution, habitat saturation and abundance. The initial hypothesis was supported by the evidence and Pakistan was identified as an area affected particularly badly.

INTRODUCTION

Interest in the fate of endangered birds has centred mainly on large, spectacular species, such as the Great Indian Bustard *Choriotis nigriceps* and the Siberian Crane *Grus leucogeranus*, or insular forms such as the Laysan Finch *Psittirostra cantans* or the various Hawaiian Honeycreepers (Halliday 1980). Small continental species do not generally merit such concern with a few prominent exceptions (Kirtland's Warbler *Dendroica kirtlandii*, Noisy Scrub-bird *Atrichohrnis clamosus*).

The resilience of continental passerine species compared with non-passerines stems from the high densities that they maintain, allowing adequate populations to survive in relatively small patches of habitat. However, with the continuing conversion of ecosystems from natural to man-made configurations, we may anticipate the fragmentation of species populations sufficient to qualify for the attention of conservationists.

Because of the antiquity of human settle-

ments and cultivation in India and Pakistan (Thapar 1966, Allchin & Allchin 1968) and the very high density of population maintaining over many centuries over most of the area (e.g., Bose *et al.* 1965), natural ecosystems occurring in the Indo-gangetic plain and the Deccan plateau have been virtually eradicated. They have been replaced, in areas suitable for agriculture, with intensive cultivation, and in most other areas with derelict scrub and semi-desert communities (Eckholm 1979, Baig 1980).

I have examined the status of endemic passerines in India and Pakistan to test the hypothesis that species characteristic of the heavily disturbed lowland ecosystems of the Indo-gangetic plain and the peninsular India may show signs of increased rates of extinction, or vulnerability to extinction. I have based my assessment on personal observations made over the last twelve years throughout India and Pakistan, augmented by those of T. J. Roberts for Pakistan, combined with descriptions of status given by Ali & Ripley (1969-74) and others. I have confined my appraisals of status to Pakistan and India east to about West Bengal which is the area over which my own experience extends and I have omitted

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Sri Lanka, with its varied endemic avifauna, and the Andaman Islands.

I have classified each species according to three criteria :

- (1) *Distribution*. Each species is assigned to one of four eco-geographical areas (see below) on the basis of its present distribution.
- (2) *Habitat saturation*. Species are classified as (a) continuous, present in all suitable habitat; (b) local, absent from some areas of apparently suitable habitat within its overall range; (c) very local, present in only a few isolated pockets.
- (3) *Abundance*. Species are ranked based on numbers generally encountered in the course of a day's birdwatching in suitable habitat : (a) abundant, >100; (b) common, 10–100; (c) scarce, 1–10; (d) rare, < 1.

Inevitably, I have had to be somewhat subjective in my choice of "endemics". Although I have only considered Pakistan, India and Western Nepal in my appraisals of status, I have dealt with all species which are endemic to the temperate western Himalayas, including some which extend into Afghanistan, and some species of the Indo-gangetic flood plain which extend into lowland Burmah.

DISTRIBUTION AND ECOLOGY

I have divided the endemic species under consideration into four groups based on present distributions and ecology :

- (1) Species with distribution centred on the Indo-gangetic plain associated mainly with waterside vegetation, and hence presumably forming part of the fauna of the seasonally inundated flood-plain forests and grasslands that must originally have covered much of the plains prior to the introduction of agriculture. This area

now supports a very high density of human population; more than 400. km⁻² (Bose *et al.* 1965).

- (2) Species found mainly in the dry rolling plateau of the Deccan. This area was formerly covered in deciduous forest, particularly Teak *Tectona grandis*. Although considerable areas of forest remain, these are much affected by disturbance, particularly grazing. Large areas have been felled, some of which have been replanted as monocultures, but large areas support only a derelict open scrub (Baig 1980).
- (3) Species occurring in the high rainfall moist-deciduous and evergreen forests of southwest India and the Western Ghats. This forest has been much reduced by commercial timber extraction and the construction of hydro power dams, but moderate areas of seminatural forest remain except in the narrow strip of coastal plain where natural forest has been practically eliminated.
- (4) Species occurring in the temperate forests of the Himalayas and associated mountains as far east as central Nepal. This encompasses species living at altitudes above those characteristic of species found in the adjacent plains (area 1), but below those characteristic of arctic-alpine habitats, most of which extend into Tibet and central Asia (Vaurie 1972). Forests in this zone consist mainly of mixed evergreen oaks (*Quercus* spp.) and conifers. Although large areas of forest have been destroyed by timber extraction, there are still substantial areas of intact natural forest (Gaston *et al.* 1983).

RESULTS

The endemic species considered are listed

TABLE 1

STATUS OF ENDEMIC PASSERINE SPECIES IN INDIA AND PAKISTAN, SOUTH OF THE GREAT HIMALAYAN RANGE

Species	Distribution (Area #)	Habitat Saturation	Abundance	Notes
<i>Sturnus contra</i>	1	Continuous	Abundant	Well adapted to man-made environments
<i>Acridotheres ginginianus</i>	1	Continuous	Abundant	
<i>Chrysomma altirostre</i>	1	Local	Rare	
<i>Turdoides earlei</i>	1	Local	Common	Western race, <i>T. e. sonivius</i> very local, probably not very numerous
<i>Prinia burnesii</i>	1	Very local	Uncommon	Western race, <i>P. b. burnesii</i> disjunct, probably not numerous
<i>Saxicola leucura</i>	1	Very local	Uncommon	
<i>Passer pyrrhonotus</i>	1	Very local	Uncommon	
<i>Ploceus megarhynchus</i>	1	Very local	Uncommon	
<i>Ploceus benghalensis</i>	1	Local	Common	
<i>Pericrocotus erythropygius</i>	2	Local	Uncommon	
<i>Mirafra erythroptera</i>	2	Local	Uncommon	Abundance hard to judge because species is very similar to <i>M. assamica</i>
<i>Pycnonotus xantholaemus</i>	2	Local	Uncommon	
<i>Pycnonotus luteolus</i>	2	Local	Uncommon	
<i>Turdoides malcolmi</i>	2	Continuous	Common	Well adapted to agricultural land
<i>Parus nuchalis</i>	2	Local	Uncommon	
<i>Estrilda formosa</i>	2	Local	Uncommon	
<i>Prinia buchanani</i>	½	Continuous	Common	
<i>Chaetornis striatus</i>	2	Very local	Uncommon	Skulking, status may be better than it appears
<i>Saxicola macrorhyncha</i>	2	Very local	Rare	
<i>Cercomela fusca</i>	½	Local	Common	
<i>Pycnonotus priocephalus</i>	3	Local	Uncommon	
<i>Turdoides subrufus</i>	3	Local	Common	Often numerous on tea estates
<i>Garrulax cachinnans</i>	3	Local	Common	
<i>Garrulax jerdoni</i>	3	Local	Common	
<i>Myiophoneus horsfieldii</i>	3	Continuous	Common	

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<i>Muscicapa pallipes</i>	3	Local	Uncommon	Hard to see because of dense habitat
<i>Muscicapa nigrorufa</i>	3	Local	Uncommon	
<i>Schoenicola platyura</i>	3	Local	Rare	
<i>Brachypteryx major</i>	3	Local	Uncommon?	Skulking, possibly commoner than appears
<i>Nectarinia minima</i>	3	Continuous	Common	Common according to Ali & Ripley (1972)
<i>Turdoides nipalensis</i>	4	Very local	Common	
<i>Garrulax variegatus</i>	4	Continuous	Common	
<i>Phylloscopus tytleri</i>	4	Local	Uncommon	Hard to identify
<i>Phylloscopus subviridis</i>	4	Local	Common	
<i>Parus melanolophus</i>	4	Continuous	Abundant	
<i>Aegithalos leucogenys</i>	4	Local	Uncommon	
<i>Aegithalos niveogularis</i>	4	Continuous	Uncommon	
<i>Mycerobas icterioides</i>	4	Continuous	Abundant	
<i>Callacanthus burtoni</i>	4	Very local	Common	
<i>Pyrrhula aurantiaca</i>	4	Local	Uncommon	

in Table 1. Three of the species of area 1 comprise more or less disjunct races split between the Indus and Ganges valleys. In all cases the western (Indus) populations are local or very local and may warrant conservation measures soon, particularly *Chrysomma altirostre*. *Passer pyrrhonotus* is confined to the Indus but appears to have adapted to tree-lined irrigation canals (T. J. Roberts, *pers comm.*). *Ploceus megarhynchus* is found only in a few localities in northern Uttar Pradesh in seasonally inundated grasslands (Ali & Crook 1959) and the status of this species invites concern.

In area 2, *Saxicola macrorhyncha* and *Chaetornis striatus* seem sufficiently uncommon to require attention, although the latter is a skulking species, easily overlooked, and may be more common than it appears. The minivet, *Pericrocotus erythropygus*, has certainly become less common around Delhi in the last 50 years and its status elsewhere may warrant investigation (cf. Basil-Edwards 1926, Ganguli 1976, *pers. obs.*). Three other species appear to be local and uncommon, but area 2 is very large and with many remnant patches of forest it is hard to assess the status of

forest birds such as *P. erythropygus*, *Parus nuchalis* and *Pycnonotus xantholaemus*.

The status of species in area 3 is easier to assess than that of species in area 2, because the area of typical forest vegetation is much smaller and extensive surveys have been carried out recently by Kerala Forest Research Institute and Calicut University researchers. Only *Schoenicola platyura* appears rare, but as in the case of *Chaetornis striatus*, the species is hard to locate and may be commoner than it seems. Five other species are local and uncommon and could easily become vulnerable to extinction with further reduction of their preferred habitats.

Area 4, like area 3, can be fairly accurately assessed because it is small and has been frequently visited by ornithologists during the past 20 years (e.g., Gaston *et al.* 1981). The status of *Phylloscopus tytleri* is hard to judge because the species is very difficult to identify in the field; it may be fairly common within its small range. *P. subviridis* is sufficiently common in its winter range in the north Indian plains to indicate that it is fairly numerous somewhere, although its breeding area is not

well known. Probably none of the species from area 4 warrant concern at present.

DISCUSSION

The initial hypothesis that areas where alterations to the natural ecosystems have been greatest will have the greatest proportion of species which are local/very local and uncommon/rare seems to be supported by the present analysis (Table 2). Areas 1 and 2,

TABLE 2

PROPORTION OF SPECIES IN FOUR ECO-GEOGRAPHICAL AREAS OF THE INDIAN SUBCONTINENT FALLING IN DIFFERENT CATEGORIES OF DISTRIBUTION AND ABUNDANCE

Area	Local/V. local Uncommon/ Rare	Local/V. local/ Common Continuous/ Uncommon	Continuous/ Common Abundant
1	5(55%)	2	2
2	8(72%)	1	2
3	5(50%)	3	2
4	3(30%)	4	3
Total	21	10	9

Combining Areas 1 and 2 (highly disturbed), and 3 and 4 (less disturbed) and columns 2 and 3 (not vulnerable), χ^2 , with Yate's correction = 1.6, $P > 0.05$.

the most intensively cultivated and those supporting the highest human population densities have 55% and 72% of their endemics in the local/very local and uncommon/rare categories, compared with only 30% for area 4. These differences are not statistically significant. However, five species from areas 1 and 2 are very local, compared with only one in the other two areas.

The very local classification of species in areas 1 and 2 does not indicate that their ranges are smaller or their populations lower than the local species found in other areas. What it does indicate is that these species occupy a much smaller proportion of the apparent potential habitat. Several of the endemic species of area 3 have very small ranges and populations may number only a few thousand pairs (e.g., *Garrulax* spp., *Muscicapa nigrorufa*, *Brachypteryx major*). However, this is clearly a function of the relatively small area of natural evergreen forest in southwest India.

One point that emerges from consideration of endemic species in areas 1 and 2 is that those occupying the Indus basin appear to be faring worse than those in the Ganges basin, with one species, *Saxicola macrorhyncha*, possibly vulnerable to extinction and two of the endemic races, *Chrysomma alirostre scindicum* and *Prinia b. burnesii*, perhaps also vulnerable. It is tempting to point to a connection with the very early establishment of urban civilization in the Indus valley (Allchin & Allchin 1968), but it seems more likely to be related to the greater aridity of the Indus valley generally and the smaller area involved, hence providing fewer remaining refuge areas.

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